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Thermalization of mini-jets in QCD kinetic theory

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We study the equilibration of a high-momentum parton traveling through a Quark-Gluon Plasma using QCD kinetic theory. We show that the energy and particle number are first transported to the soft sector by collinear cascade and then isotropized by elastic scatterings. For a static thermal background, we find that the jet wake can be described by a thermal distribution function with angle-dependent temperature, i.e., thermalization in momentum happens before isotropization in angle. We also study the kinetic and chemical equilibration of mini-jets in an expanding QGP and determine the time scale for the mini-jet to become part of the non-equilibrium background.

Category

Theory

Collaboration (if applicable)

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